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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/671,740

09/29/2000

Mitsuhiro Shibazaki

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08/01/2006

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EXAMINER

CHANG, SUNRAY

ART UNIT

PAPER NUMBER

2121

DATE MAILED: 08/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Supplementary
Notice of Allowability**

Application No.

09/671,740

Examiner

Sunray Chang

Applicant(s)

SHIBAZAKI, MITSUHIRO

Art Unit

2121

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to March 9th, 2006.
2. ☒ The allowed claim(s) is/are 2,3,7 and 11, renumbered as 1-4 respectively.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Tom Brown on July 10th, 2006

The application has been amended as follows:

Canceling claims 1, 4 – 6, 8 – 10.

Remaining claims 2, 3 and 7.

Further new claim 11 has been added as follow:

Claim 11 (NEW):

An apparatus for determining a regular N-polygonal figure for a boring hole having vertexes of N in number, characterized in that the said apparatus includes an input means and a control means,

the said input means is constructed to carry out functions for:

inputting so as to revolve a regular (N+1)-polygonal figure along a circle, which circle is concentric to the center of a regular N-polygonal figure to be determined and has a radius r ;

inputting so as to rotate such the regular (N+1)-polygonal figure at an angular velocity ω ;

setting the regular (N+1)-polygonal figure so as to define a contour which is inscribed on a circle having a radius $(N+1)^2 r$, and

setting an angular velocity $(N+1)\omega$ at which the regular $(N+1)$ -polygonal figure revolves:

and that

the said control means is constructed to carry out a function for defining a regular N -polygonal figure to be determined, which is circumscribed on a circle having a radius $N(N+2)r$, by an area being swept by the regular $(N+1)$ -polygonal figure; and

boring a hole having a shape defined by the regular N -polygonal figure:

the contour of the regular N -polygonal figure can be defined by a function $f(\theta)$;

function $f(\theta)$ is a one-valued function;

function $f(\theta)$ is a periodic function with a period $2\pi/N$.

function $f(\theta)$ has one maximum value and one minimum value in one period,

function $f(\theta)$ has line symmetry with respect to the center of the minimum point between the two maximum points. in regard to one period from a maximum point to the next maximum point of the function $f(\theta)$. and

the function $f(\theta)$ has a positive curvature or no curvature.

REASONS FOR ALLOWANCE

1. This office action is in responsive to the paper filed on March 9th, 2006.
2. The following is an examiner's statement of reasons for allowance:
 - The claimed invention is a method for determining a regular N -polygonal figure for a boring hole having vertexes of N in number.

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- The claimed method include a limitation “the regular $(N - 1)$ -polygonal figure revolves at an angular velocity $(1 - N)\omega$ ”.
 - The combination of prior art of record does not expressly disclose or suggest the “method” with the feature of “the regular $(N - 1)$ -polygonal figure revolves at an angular velocity $(1 - N)\omega$ ”.
3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance”.
4. Claims 1, 4 – 6, 8 – 10 have been cancelled.
- Claim 11 has been added.
- Claims 2, 3, 7 and 11 are deemed allowable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sunray Chang whose telephone number is 703-305-8744. The examiner can normally be reached on M-F 7:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Anthony Knight can be reached on (703) 308-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Anthony Knight
Supervisory Primary Examiner
Group Art Unit 2121
Technology Center 2100
U.S. Patent and Trademark Office

July 27, 2006

Ramesh Patel
RAMESH PATEL 7/28/06
PRIMARY EXAMINER
For Anthony Knight